

*Waste Tire  
Management Program  
2001 Staff Report*

*May 2003*

STATE OF CALIFORNIA

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Governor

**Winston H. Hickox**  
Secretary, California Environmental Protection Agency

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# Introduction

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This report (*Waste Tire Management Program—2001 Staff Report*) provides an overview of the California Integrated Waste Management Board's (CIWMB) accomplishments in implementing the California Tire Recycling Act and subsequent related legislation during fiscal year (FY) 2000/01. The data compiled to analyze the waste tire diversion rates are for calendar year 2001. For the purposes of this report, "CIWMB" refers to the full organization, and "Board" refers to the six appointed Board member positions in the CIWMB.

California is faced with the challenge of diverting or safely managing more than 33 million reusable and waste tires generated annually in the state. In addition, an estimated 2 million tires remain in unpermitted stockpiles in California. The state nearly doubled the number of waste tires recycled between 1991 and 2001, but the number of waste tires generated annually continues to exceed the number of tires diverted. CIWMB staff estimates that in 2001, 24.9 million of the 33.3 million reusable and waste tires generated (74.8 percent) were diverted from stockpiling or disposal.

The California Tire Recycling Act requires the Board to adopt a five-year plan, to be updated every two years, establishing goals and priorities for the waste tire program (Public Resources Code [PRC] section 42885.5(a), resulting from enactment of Senate Bill 876 [Chapter 838, Statutes of 2000, Escutia]). The plan was adopted in September 2001 (*Five-Year Plan for the Waste Tire Recycling Management Program: Fiscal Years 01/02–05/06*, CIWMB publication #620-01-004 [Five-Year Plan]). As this staff report covers only the calendar year of 2001, those activities that are listed in the Five-Year Plan for FY 2001/02 but that occurred in early 2002 are not discussed in this report.

This report is organized into four sections:

- Section I—"Tires Generated and Their Markets." Provides estimates of reusable- and waste-tire generation, consumption, and disposal in California for 2001.
- Section II—"Market Development and Technology Activities." Provides a summary of CIWMB's market development and diversion programs.
- Section III—"Waste Tire Permitting, Enforcement, and Hauler Programs." Describes CIWMB's accomplishments in permitting and in enforcing regulations at waste tire facilities. This section also includes information about the tire hauler registration and manifest system program.
- Section IV—"Cleanup, Abatement, and Remedial Action Programs." Discusses current and past cleanup efforts, and includes information on the remediation efforts underway at the Filbin tire pile near Westley, California, and the Royster tire pile near Tracy, California.

# **I. Waste Tires Generated and Their Markets**

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## ***Estimate of Waste Tires Generated***

The U.S. Environmental Protection Agency (U.S. EPA) calculates the number of waste tires by using the formula of one waste tire per person, per year to obtain an average for the nation. However, California uses a different factor: 0.915 tires per person, per year. To estimate the number of reusable and waste tires generated in the state, CIWMB primarily uses population increases and state industry trends and approximations. Further, because of the lack of a uniform reporting system on tire recycling activities in California, CIWMB also uses estimates to quantify tires recycled or diverted from landfill disposal and stockpiling; staff arrive at these estimates by using information from industry contacts that transport, process, and/or recycle large quantities of waste tires.

In 2001, staff analyzed the accuracy of the method used for calculating the generation rate. Staff believed that the 0.915 factor developed by an industry survey in 1991 and 1992 needed to be re-evaluated. Staff determined an adjustment to the factor was necessary due to the changing economic infrastructure and the variety of products available in the market. Staff therefore selected the number 0.958 as the waste tire generation factor for 2001. This number is halfway between the previous California factor and the national factor.

Staff also obtained from the Board of Equalization (BOE) data on tire fees collected from car sales. However, since this data may not immediately translate to waste tire generation, staff was unable to use the data to verify the number of waste tires generated.

Staff anticipates that data from waste tire manifests (forms accompanying shipments of waste or used tires, completed by waste or used tire generators, haulers of waste and used tires, and operators of end-use facilities) will eventually give a more accurate number; however, data will not be available until the year 2004. Once the data from the manifest system is available, staff may adjust the California factor again.

The Department of Finance's 2001 data indicates that California's population is estimated at 34.8 million. Using the 0.958 factor, CIWMB estimates that about 33.3 million reusable and waste were generated in California during 2001.

CIWMB staff also estimated that of the approximately 33.3 million reusable and waste tires generated in 2001, approximately 24.9 million or 74.8 percent of the tires were diverted for various alternatives, including reuse, retreading, and combustion. Table 1 presents waste tire generation, diversion, and disposal in California for 1990–2001.

## ***Reuse***

An alternative to disposal is tire reuse. After the purchase of new tires, the remaining reusable tires that still have a legal tread depth can be resold by a dealer, rather than being disposed of or recycled prematurely. Based on information from industry contacts, 4.1 million tires, or 12 percent of the estimated 33.3 million reusable and waste tires generated in 2001, were reused.

## ***Rubberized Asphalt Concrete, Alternative Daily Cover, and Civil Engineering Uses***

Based on information from industry contacts, CIWMB staff estimates about 7.7 million tires were used for rubberized asphalt concrete (RAC) and crumb rubber products,<sup>1</sup> including playground cover, speed bumps, carpet tile, mats, sound walls, and other various cut, stamped, or molded products. Staff estimates 4.2 million tires were used for other activities, including 3.1 million tires for alternative daily cover (ADC) and 1.1 million tires for landfill gas collection wells, agriculture, etc. Approximately 3.0 million tires were used for civil engineering projects, such as landfill gas collection trenches, lightweight fill, and a levee reinforcement project.

## ***Retreading***

Tire retreading is a viable option for renewing reusable tires by reusing the tire casing after the legal tread has been worn off. Based on surveys, industry contacts, and information obtained from the Tire Retread Information Bureau's (TRIB—[www.retread.org/](http://www.retread.org/)) "2002 Fact Sheet—Retreaded Tires," CIWMB staff has determined that approximately 2.4 million retreaded tires were sold in 2001 in California.

## ***Exported Tires***

Tire export (consisting of both reusable and waste tires) reduces the number of tires requiring eventual disposal in California. According to industry contacts and staff estimates, approximately 2.6 million reusable and waste tires were exported in 2001.

## ***Combustion***

Tire combustion significantly reduces the number of tires requiring landfill disposal or stockpiling. In 2001, about 5.2 million tires were combusted as fuel in California (4.2 million were consumed by the cement manufacturing industry, and 1 million were consumed by a cogeneration plant in Stockton).

## ***Imported Tires***

CIWMB staff estimates that in 2001 approximately 1.7 million waste tires were imported into California for recycling from Utah, Oregon, Nevada, Arizona, and Canada. Imported waste tires were used in combustion as a fuel supplement and to generate crumb rubber. Imported tires have also been disposed of in landfills. While CIWMB staff did not keep track of data on imported tires disposed of in landfills in 2001, staff is now keeping up with this activity. The interstate transport of waste tires is market-driven; neither State nor local governments can regulate imports and exports of tires. Factors influencing importation are geographic proximity to end users and subsidies provided by other states to facilitate collection, recycling, and disposal of waste tires.

## ***Summary***

It is apparent primarily from industry contacts and trends that waste tire disposal and stockpiling are decreasing, while waste tire diversion is increasing (Figure 1). In 1990, staff estimated that 9.2 million tires (34 percent of the 27 million tires generated) were diverted from landfill disposal and stockpiling. In 2001, staff estimated that approximately 24.9 million California tires (74.8 percent of the 33.3 million tires generated) were diverted from the annual waste stream. Figures 2 and 3 provide estimations for reusable- and waste-tire recycling and disposal in California for 2001 and the period from 1990 to 2001.

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<sup>1</sup> In actuality, more tire rubber is used for RAC or crumb rubber products. However, the extra rubber used consists of tire buffings from tire retread operations. These tires are already accounted for as retreaded tires.



**Table 1 California Waste Tire Generation, Diversion, and Disposal, 1990–2001**  
(Numbers in millions of passenger tire equivalents [PTE<sup>1</sup>])

A	B	C	D	E			F		G	H		I	J	K	L
Year	California Population (Millions)	Estimated Tires Generated	Reused	Recycling and Other Uses <sup>2</sup>			Retreaded <sup>3</sup>		Exported	Tire-Derived Fuel (TDF) Combusted		Imported <sup>6</sup>	Total Number of Calif. Tires Diverted <sup>7</sup>	Remaining Number of Calif. Tires Disposed Formula: C minus J	Percentage of California Tires Diverted <sup>8</sup> Formula: J divided by C
							Light	Heavy		Energy Product <sup>4</sup>	Fuel Suppl. <sup>5</sup>				
1990	29.5	27.0	1.0	0.6			0.9	1.4	1.3	2.4	1.6	0.0	9.2	17.8	34.1%
1991	30.1	27.5	1.0	0.8			0.8	1.4	1.3	4.1	1.7	0.4	10.7	16.8	38.9%
1992	30.7	28.2	1.1	1.1			0.7	1.4	1.3	4.7	2.1	0.6	11.8	16.4	41.8%
1993	31.1	28.5	1.3	1.5			0.7	1.4	1.3	4.7	3.0	0.3	13.6	14.9	47.7%
1994	31.7	29.0	1.3	1.7			0.7	1.7	1.3	5.7	6.0	0.2	18.2	10.8	62.8%
1995	32.3	29.5	1.5	1.8			0.7	1.7	1.7	4.7	6.1	0.6	17.6	11.9	59.7%
1996	32.6	30.0	1.5	2.3			0.7	1.7	1.7	4.3	4.6	1.5	15.3	14.7	51.0%
1997	33.2	30.4	1.5	5.4			1.0	1.8	1.7	3.5	5.5	3.2	17.2	13.2	56.6%
1998	33.8	30.9	1.5	9.1			1.0	1.8	3.1	4.5	3.0	2.2	21.8	9.1	70.6%
				Crumb Rubber	Civil Eng.	Other									
1999	34.0	31.1	2.4	5.8	0.7	3.6	0.8	1.7	1.5	3.8	4.1	2.0	22.5	8.6	72.3%
2000	34.5	31.6	3.6	7.3	1.6	4.1	0.7	1.7	1.9	1.0	4.2	3.2	22.9	8.7	72.5%
2001	34.8	33.3	1.5	7.7	3.0	4.2	0.7	1.7	2.6	1.0	4.2	1.7	24.9	8.4	74.8 % <sup>9</sup>

1 Based on 20-pound average weight of a passenger car scrap tire.

2 This category includes tires used in ground rubber products and other products made from waste tires. It does not include tire buffings from retreading, because buffings are accounted for in the "Retreaded" category. However, since tire buffings are recycled, the number of waste tires recycled is greater than shown here. The three-way split in 1999 shows the number of tires diverted through crumb rubber products, civil engineering applications, and other uses (recycling, alternative daily cover, agriculture use, etc.).

3 "Light" refers to passenger and light-truck tires. "Heavy" refers to heavy-duty truck tires. Tire buffings are included during the retreading process.

4 This figure represents the number of tires combusted in power plants primarily from the annual waste tire stream, but may also include some stockpiled tires from site cleanups.

5 This figure represents the number of tires combusted primarily from the annual waste tire stream, but may also include some stockpiled tires from site cleanups.

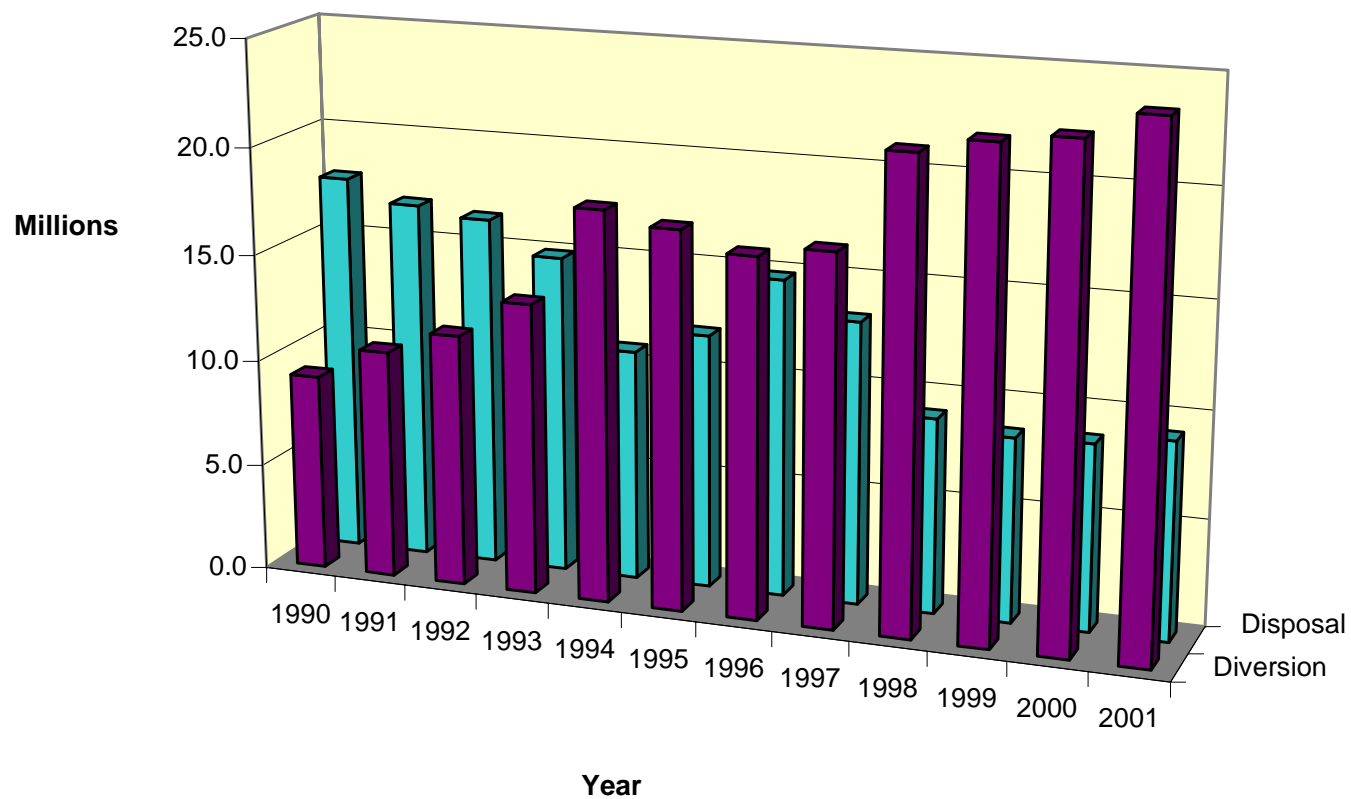
6 This figure includes tires imported for combustion as a fuel supplement or used to generate crumb rubber. It does not include imported tires disposed of in landfills.

7 This figure is determined by summing the number of tires reused, recycled, retreaded, exported, combusted for energy production, and combusted as fuel supplement, and then subtracting the number imported. The figure represents the total number of tires diverted, primarily from the annual waste stream.

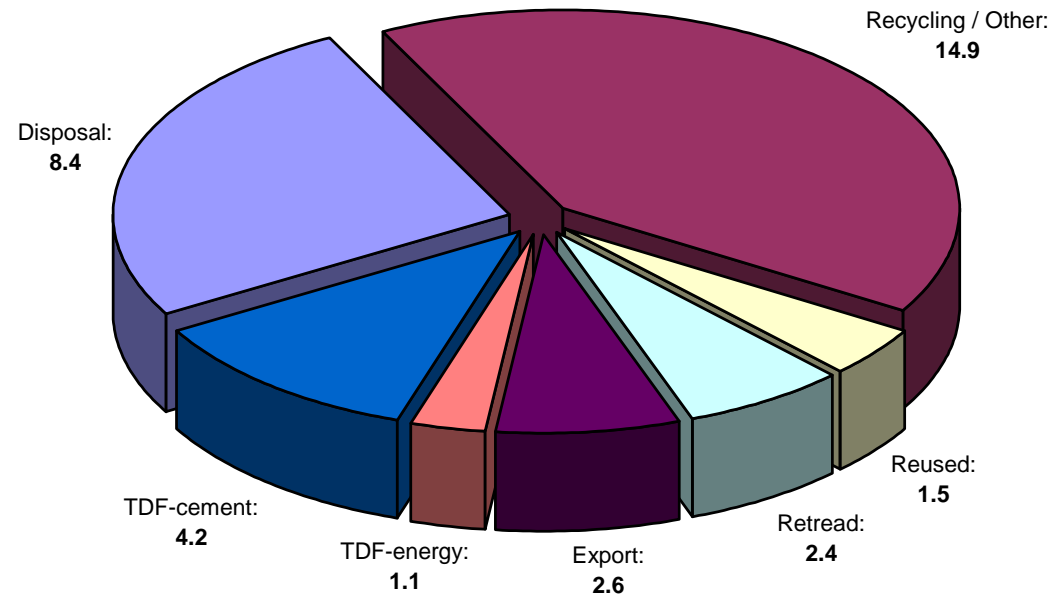
8 This figure represents the percentage of California waste tires diverted from the annual waste stream.

9 Based on investigation, staff adjusted the estimated waste tire generation factor to 0.958 waste tires per person, per year in California for 2001.

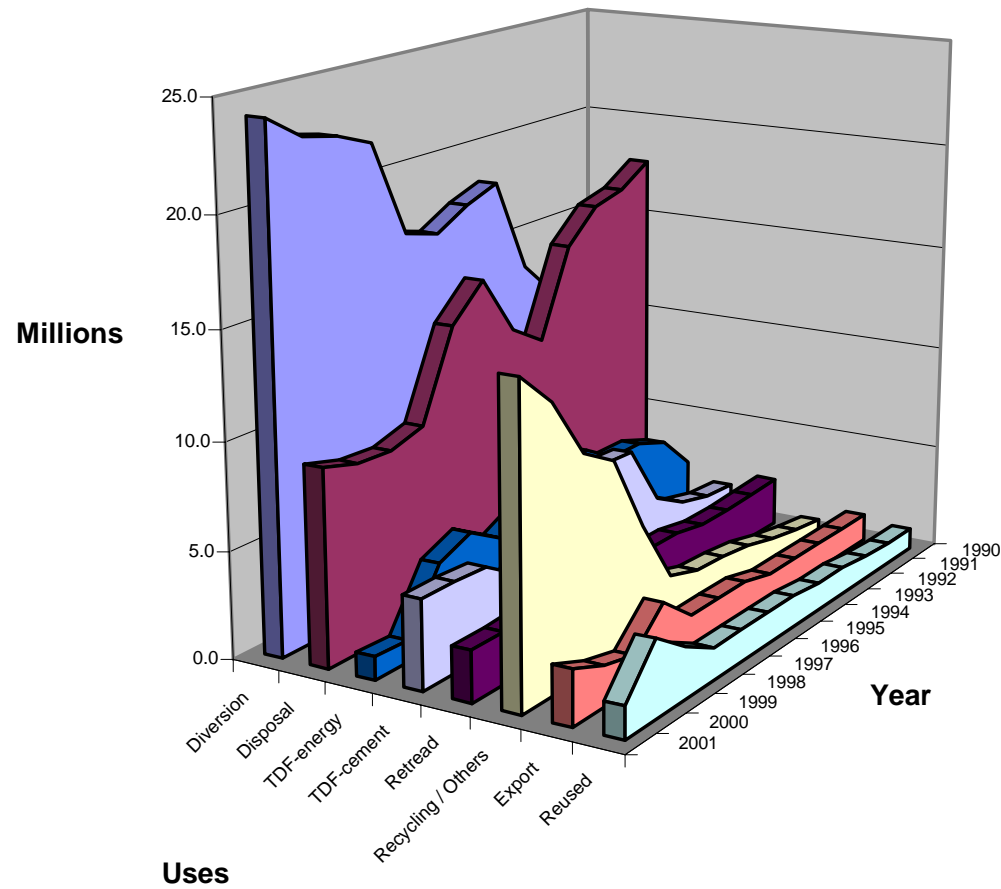
**Figure 1: Estimated Waste Tire Diversion and Disposal, 2001  
(Numbers in Millions of PTEs)**



**Figure 2: Estimated Reuseable and Waste Tire Recycling and Disposal, 2001  
(Numbers in Millions of PTEs)**



**Figure 3: Estimated Reusable and Waste Tire Recycling and Disposal, 1990–2001  
(Numbers in Millions of PTEs)**



## II. Market Development and Technology Activities

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Since 1990, the state's waste tire diversion rate has increased dramatically, climbing from 34 percent to 74.8 percent in 2001. Today, California's waste tires are used to produce crumb rubber for new products, recycled in rubberized asphalt concrete (RAC), used in civil engineering applications, or combusted as fuel.

The California Tire Recycling Act (commencing with PRC section 42872) authorized CIWMB to award grants and loans to businesses and public entities for activities that could expand markets for used tires. The intent of the act is to encourage the growth of a wide range of uses for waste tires. The act specifically lists several types of projects: polymer treatment, crumb rubber production, retreading, shredding, and the manufacture of such products as artificial reefs, rubber asphalt, playground equipment, crash barriers, erosion control, floor and track surfacing, oil spill recovery, roofing, and other environmentally safe applications. Grants are intended to fund research projects, to encourage business development, and to assist local government in implementing collection, outreach, and public education programs.

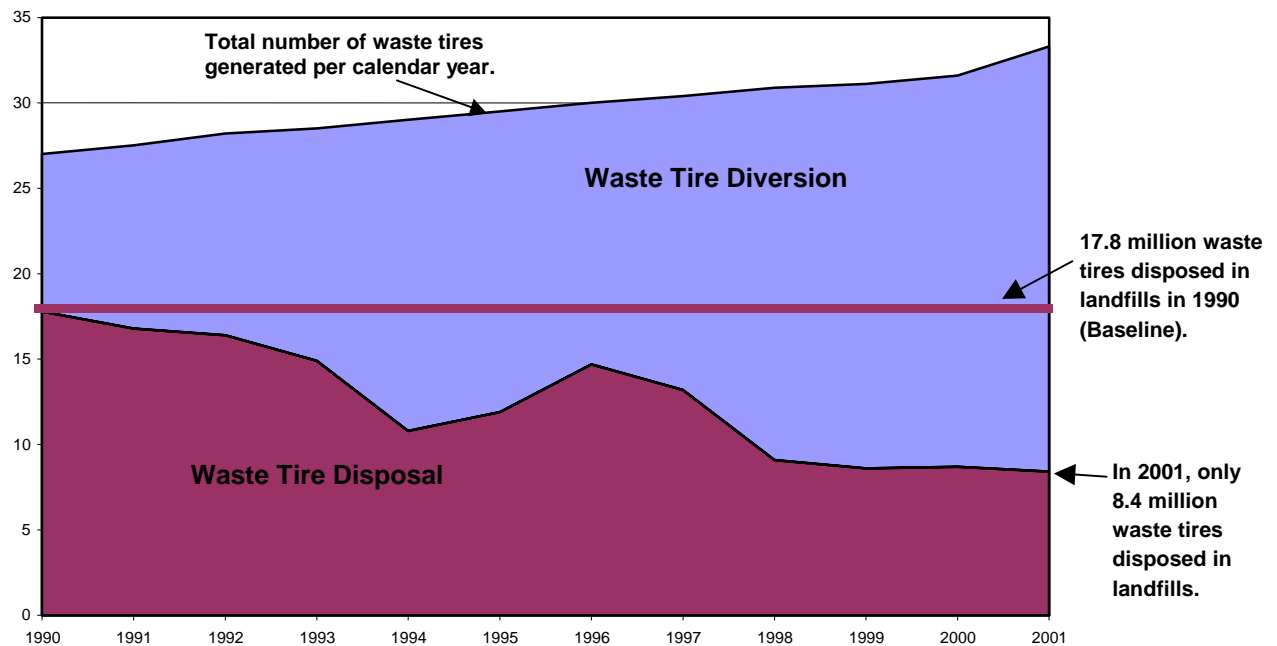
PRC section 40507(c)(2)(D) requires CIWMB to report on the comparative costs and benefits of the recycling or conversion processes for waste tires funded pursuant to the California Tire Recycling Act. Because the benefits can extend beyond the present, it is challenging to pinpoint all the benefits the tire recycling act has had on California.

One key benefit is the decrease in disposal of waste tires at landfills over the last decade. By diverting an additional 62.3 million waste tires (686,126 tons) from California landfills in the last decade, CIWMB has demonstrated that waste tire diversion efforts provided for in the California Tire Recycling Act are successful and valuable tools for increasing the lifespan of California landfills. The landfill space saved by the diversion of 62.3 million waste tires would equal 2,122,852 cubic yards and implies a decrease of more than \$ 31.8 million in tipping fees paid to solid waste facilities. Data from CIWMB's 2000 landfill survey estimates the average disposal cost per cubic yard at \$15.02.

**Calculation of Tires Diverted:** The cumulative result of 62.3 million waste tires diverted from California landfills (as mentioned previously) was calculated by adding the number of diverted tires each year and subtracting the 1990 baseline of 17.8 million tires disposed of for each year. This was based on an assumption that the disposal of waste tires for 1990 (17.8 million tires) would have remained constant throughout the decade without CIWMB diversion efforts.

From the base year of 1990 when 9.2 million waste tires were diverted from disposal, the number of tires diverted from landfill disposal has increased steadily, as shown in Figure 4.

**Figure 4: Waste Tire Diversion vs. Disposal, 1990–2001**  
(Numbers in millions of PTEs)



During the early years of the grant program, CIWMB funded diverse and innovative technologies to reach as wide an audience as possible and encourage the greatest number of new technologies. Based on the lessons learned from its early experience and the evaluation of early projects, CIWMB gained a better understanding of the waste tire problem, the range of possible solutions, and the potential results. One of the lessons learned from the program's first years is that not one solution, but a range of solutions, is needed to absorb the annual generation of waste tires in California. The solutions include linking remediation and stabilization efforts to end-uses such as civil engineering applications, encouraging public-private partnerships, combustion in cement kilns, and considering combined grant and loan packages.

The remainder of this section provides specific information on the various waste tire diversion grant programs developed by CIWMB.

## ***Playground and Track Surfacing Grants***

From FY 1992/93 through FY 1999/2000, the Board awarded 120 grants totaling \$2.68 million for playground and track surfacing. Two of these grants were for research and development projects related to appropriate surfacing for playground materials. These grants were awarded to school districts and local governmental entities for the purchase of playground cover or track surfacing made from waste tires, and to businesses for the development of surfacing materials. Due to the anticipated passage of Senate Bill 876, no playground or track grants were awarded or offered in FY 2000/01.

The Americans with Disabilities Act (ADA) requires playground operators to provide wheelchair access to playgrounds. CIWMB grants have provided assistance to some jurisdictions so they can use products made from California waste tires and also comply with the ADA requirement on accessibility to playgrounds.

The FY 1999/2000 playground and track surfacing grants resulted in the diversion of over 66,000 waste tires (193,812 pounds of waste tire rubber). Of the \$1,012,917.50 awarded in 1999/2000, \$784,279.06 was expended (77 percent). Eight of the 44 grants withdrew from the grant program before their projects were completed. Consequently, 36 (82 percent) successfully completed their

project. The FY1996/97 and FY 1997/98 grants resulted in the diversion of 50,000 and 45,000 California waste tires, respectively. Playground and track surfacing grants fund not only the surfacing materials made from California waste tires, but also fund preparation, installation, public outreach, and project signage.

## **Commercialization Grants**

From FY 1991/92 through FY2000/01, the Board awarded grants totaling more than \$2.8 million to develop and commercialize products and technologies that use tires and tire rubber. CIWMB commercialization grants have aided the research, development, and marketing of civil engineering applications, crumb rubber production, tire use in new molded rubber products, and playground mats.

Molded rubber products have the potential to use several million waste tires per year. Most molded-rubber products made from recycled tire rubber are comparable in cost to competing products made from virgin materials. CIWMB continues to fund grants and loans for specific molded-rubber projects and will monitor the development of these projects and their associated products. Technology commercialization involves the promotion of tire-recycling technologies that increase the efficiency of processing tires or tire materials.

## **Rubberized Asphalt Concrete Activities**

From FY 1991/92 through FY 2000/01, the Board provided nearly \$3.7 million to support the use of rubberized asphalt concrete (RAC). The support has taken many forms including the providing of testing equipment for the California Department of Transportation (Caltrans); in-field testing and demonstration projects; awarding of grants for local government application of RAC; conducting workshops and conferences to inform potential RAC users; and funding two technology centers to provide statewide technical assistance in the use of RAC.

During FY 2000/01, two CIWMB-funded RAC projects were completed by the cities of Avenal and South Gate. Additionally, in 2001, several RAC projects were completed by local governments, in conjunction with the RAC incentive program of the Southern California RAC Technology Center (RACTC). A major accomplishment of the Northern California RACTC was the publishing of the *Asphalt Rubber Design and Construction Guidelines (January 2002)* for use by local government agencies and paving industry companies.

Currently, RAC projects use more than 3 million PTEs per year. Future use of this technology could consume 5 to 6 million PTEs per year.

## **Technical Assistance for Civil Engineering Applications of Waste Tires**

CIWMB's waste tire abatement program also enables CIWMB to fund research and development projects for alternative civil engineering uses for waste tires.

During FY 2000/01, CIWMB expended significant resources continuing to promote the use of shredded tires in various civil engineering applications. Under an environmental services contract with Dana Humphrey Consulting Engineering, CIWMB continues to provide education on, and promote the use of, tire shreds as an alternative to conventional lightweight fill materials in highway construction projects.

These efforts have been focused primarily toward Caltrans, since it is the agency responsible for developing technical standards for highway construction. The efforts have included coordinating meetings with Caltrans design engineers, giving short courses on the use of shredded tires in highway construction, and providing both technical and environmental information to regulatory agencies responsible for the oversight of these projects. As a result, Caltrans has identified several potential highway projects in which shredded tires can be used as lightweight fill. The first of

these projects was for the construction of an interchange at Dixon Landing on Highway 880 in San Jose. This project was constructed in the summer of 2001 and used an estimated 900,000 PTEs. A second proposed project is a retaining wall that will utilize tire shreds as lightweight fill material in Southern California. CIWMB in coordination with Caltrans, will develop conceptual designs and conduct preliminary field tests to validate the designs.

In another civil engineering application, CIWMB partnered with the Valley Transportation Authority (VTA) in San Jose to investigate the use of tire shreds as a vibration-dampening material in San Jose's light rail system. The results of the investigation were favorable, and VTA is now using tire shreds to construct a section of its light rail system planned for completion in 2003.

The CIWMB continues to pursue other civil engineering applications for waste tires. CIWMB has contracted with the University of California to investigate the seismic dampening properties of tire shreds in the design of bridge abutments. CIWMB staff will continue working with Dana Humphrey Consulting Engineering to conduct research into the environmental impacts from tire-shred fills to assist in developing technical standards for civil engineering applications and tire-shred monofills. This research would require monitoring of pilot and field studies to demonstrate and promote civil engineering applications of waste tires.



### III. Waste Tire Permitting, Enforcement, and Hauler Registration Programs

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#### ***Tire Facility Permitting***

Potential fires and vector harborage associated with improperly stored waste tires throughout the state prompted California legislators to create a regulatory program to ensure the proper storage of waste tires. CIWMB is charged with the task of implementing those tire laws and reducing the threat improperly stored waste tires pose to public health and safety and the environment. Current laws and regulations require people who store, stockpile, accumulate, or discard waste tires to comply with tire storage and disposal standards and to obtain a waste tire facility permit, exclusion, or exemption.

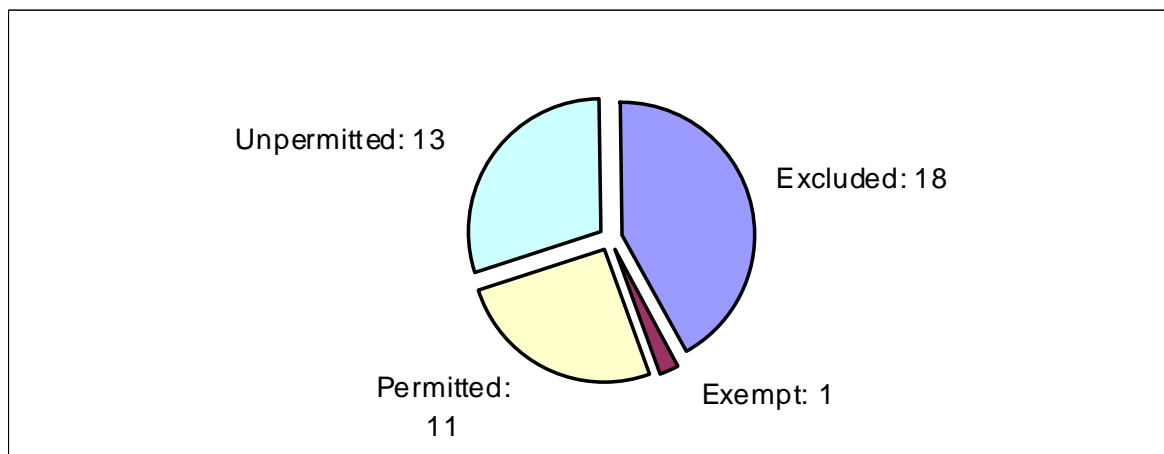
The term “waste tire (WT) location” references facilities that are storing fewer than 500 tires. WT locations are not regulated by the State. Permitted solid waste landfills and transfer stations that receive fewer than 150 tires per day (averaged annually) are not required to obtain a separate permit for tire storage, but are required to meet the storage requirements. Used tire dealers that rack or stack their tires in accordance with tire law are not required to obtain a permit. Auto dismantlers with fewer than 1,500 waste tires and tire retreaders with fewer than 3,000 waste tires on their property may be eligible for permit exclusions.

Permit exclusions may also be granted if waste tires are stored in fully enclosed, movable containers, such as truck trailers. Cement manufacturers that burn waste tires for fuel can be exempted from waste tire facility permit requirements and are allowed to store up to a 30-day supply of fuel (tires) on their property, provided they meet specific criteria set forth in the tire laws. Minor waste tire facilities (storing 500 or more, but fewer than 5,000, waste tires) and major waste tire facilities (storing 5,000 or more waste tires) are required to obtain waste tire facility permits issued by CIWMB.

As of December 31, 2001, CIWMB had identified 1,262 sites that were storing waste tires. Of these sites, 578 have been “archived,” meaning the sites have been cleaned up, closed, and are no longer receiving waste tires.

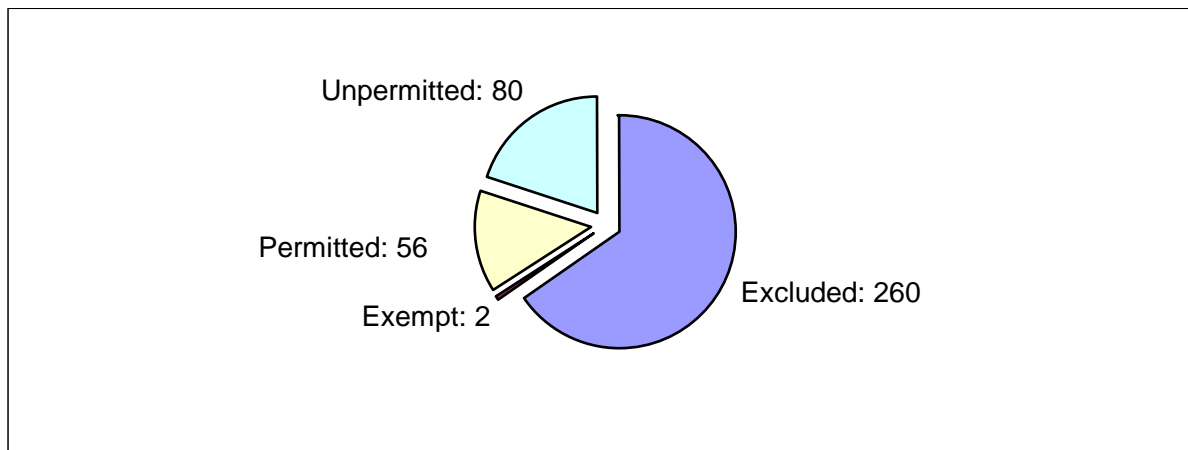
As of December 31, 2001, there were 43 active major waste tire facilities (Figure 5). Of those 43 sites, 11 have obtained major waste tire facility permits, 18 are excluded, 1 is exempt, and 13 are unpermitted.

**Figure 5: Major Waste Tire Facilities**



As of December 31, 2001, 398 active minor waste tire facilities had been identified (Figure 6). Of these, 56 facilities have minor waste tire facility permits, 260 are excluded, 2 are exempt, and 80 are unpermitted.

**Figure 6: Minor Waste Tire Facilities**



In conjunction with local enforcement and other State agencies, the CIWMB works to locate and identify locations where waste tires are being improperly stored. The aim is to reduce the threat improperly stored waste tire pose to the public health and safety and the environment through the enforcement of permitting requirements, which include waste tire storage standards.

## ***Tire Enforcement***

Since the inception of the waste tire enforcement program in 1994, 910 waste tire sites have been investigated. Of these sites, 742 now comply with CIWMB storage requirements or have had tires removed. Investigations are pending on 168 sites.

CIWMB enforcement efforts have resulted in the cleanup of approximately 5.8 million waste tires since 1994. Either the operator or property owner removed these tires as a direct result of CIWMB enforcement action. Using historical cost data from State-funded tire cleanups, staff estimates that CIWMB's enforcement program has saved the State \$8.9 million that it may have spent to remove tires from illegal sites. In situations where the operator or the property owner failed to correct conditions found to violate State requirements, CIWMB has initiated further enforcement action. Since 1994, CIWMB has issued the following enforcement actions:

- 396 Cleanup and Abatement Orders
- 173 Administrative Complaints
- 33 Criminal Complaints

In its enforcement efforts, the Board has imposed nearly \$1.5 million in fines against those owners and operators who have failed to comply with tire program requirements.

## ***Hauler Registration***

The hauler program consists of two separate components: registration and enforcement. State law requires every person who transports 10 or more waste tires to hold a valid tire hauler registration. Prior to obtaining registration, a prospective hauler must post a \$10,000 bond.

The law also requires compliance with the provisions of the waste tire hauler manifest system. Registered tire haulers must renew their registrations annually with CIWMB, possess manifests during transport of waste tires, transport tires only to authorized facilities, and return the completed manifest to the generator of the waste tires, if requested. State law requires persons

receiving tires from unregistered haulers to report the hauler to CIWMB, providing the name, address, and license plate number of the unregistered hauler.

In 2001, there were 854 waste tire haulers registered in California. The number of vehicles registered to these companies was 7,612. All registrations expire at the end of each calendar year. During the last quarter of the calendar year, staff sends renewal packages to registered haulers so they can renew their registrations in a timely manner. The number of registrations varies. As enforcement agencies conduct more enforcement, the number of haulers known to require registration will increase.

The law allows exemption from waste tire hauler registration under certain circumstances. Some exemptions are intended for common carriers as long as the transportation of tires is done as back-haul and the income derived from the transportation of tires is less than 10 percent of the annual income of the common carrier. To apply for an exemption, the hauler must submit a request in writing to the CIWMB. Staff then determines if the carrier qualifies for the exemption. For 2001, staff issued six exemptions to common carriers.

**Table 2: Tire Hauler Program Outcomes for 2001**

	Number
Haulers Registered	854
Vehicles Registered	7,612
Cancellations (Non-renewals)	337
Complaints	772
Administrative Actions	8

## ***Waste Tire Manifest System***

Existing regulations provide that the generator, hauler, and end-use facility retain copies of manifests. PRC section 42961.5 requires copies of each manifest to be submitted to the CIWMB for monitoring tire loads and movement within California. Therefore, the Board approved modification of waste tire manifest and waste tire hauler regulations to incorporate these changes so that the CIWMB will receive a copy of the completed manifest document for each transaction performed by the waste tire generator, hauler, and end-use facility.

Public workshops were held in the fall of 2001 to obtain a better understanding of the tire hauling industry. As a result, a new waste tire manifest form and tire hauling log have been developed and are scheduled to be ready for distribution in mid-year 2003. The manifest form and log will require the waste tire generator, hauler, and destination site to submit the reporting forms to the CIWMB within 90 days of a tire shipment to determine whether waste tires are being properly disposed of or tracked.

CIWMB staff also conducted public workshops in November 2001, for discussion and comments on the proposed "California Uniform Waste and Used Tire Manifest System." Numerous comments were received from industry concerning this new manifest system and were considered during the initial design and development of the documents. Staff anticipates conducting a testing phase of the new prototypes by selecting a small group of waste tire generators, haulers, and end-use facilities to participate in using these documents for a two-week period.

## ***Waste Tire Enforcement Grants***

Since it began in 1996, the waste tire enforcement grant program has awarded more than \$2.17 million in grants to 30 different jurisdictions. The program provides cities, counties, and local enforcement agencies with up to \$200,000 per grant to monitor and take appropriate enforcement actions against persons stockpiling waste tires without a valid waste tire facility permit.

Historically, these grants have provided annual funding for inspection, compliance, and surveillance activities.

In FY 2001/02, the Board awarded eight waste tire enforcement grants totaling \$768,783 to local governments for enforcement activities. Grants expire and final reports are due in April 2004.

### ***California Highway Patrol Contract***

During FY 2000/01, CIWMB continued the CHP aerial surveillance program. CHP has provided aerial photographs to CIWMB, enabling staff to identify 328 locations believed to be storing waste tires. Staff has investigated 165 of these waste tire piles, resulting in the following enforcement actions: letters of violation, cleanup and abatement orders, and administrative complaints. Information concerning these piles, including aerial photographs, is contained in a CHP database designed by CIWMB.

## IV. Cleanup, Abatement, and Remedial Action Programs

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The waste tire remediation and engineering technical services program implements and oversees programs on waste tire stabilization and abatement, waste tire cleanup grants, and technical assistance for civil engineering applications of waste tires.

### ***Local Government Public Education and Amnesty Day Grants***

Public education is one of the most effective ways to achieve source reduction. Educating the general public on the importance of proper tire maintenance and disposal can increase useful tire life and decrease the illegal dumping of discarded tires.

No local government public education and amnesty grants were awarded or offered in FY 2000/01 because the statute pertaining to collection of tire recycling fees had sunset in January 2000 and new legislation reinstating the fee was not effective until later in 2000.

### ***Waste Tire Stabilization and Abatement Contracts***

CIWMB utilizes contractors to remediate illegal waste tire sites. The contract used in 2001 was awarded to SUKUT Construction, Inc. and funded at \$2,351,000. This contract expired on May 31, 2002.

Since 1995, CIWMB has removed more than 13.1 million waste tires from 50 sites at an average removal cost of \$0.66 per tire, for a total cost of nearly \$8.6 million. Of the 13.1 million waste tires removed since 1995, 77 percent went to a productive end use and 23 percent were disposed of in landfills. The removal cost per tire varies greatly among sites; generally, the more tires removed from a single site, the lower the cleanup cost –per tire, as detailed in the table below.

**Table 3: Average Cost Per Tire for Remediation, Based on Project Size**

Number of Tires Remediated	Average Cost Per Tire
1 million and up	\$0.48
100,000 to 1 million	\$1.13
50,000 to 100,000	\$1.14
10,000 to 50,000	\$1.29
1,500 to 10,000	\$2.19

### ***Waste Tire Fires***

In 1998 and 1999, California experienced two major fires at large tire piles. These sites are now known as the Westley tire fire site (Westley, 1998) and the Royster tire fire site (Tracy, 1999). In 2001, CIWMB completed the removal of 6,100 tons of unburned tires and approximately 31,000 tons of partially burned tires, ash and contaminated soil from the Westley tire fire site.

The site characterization of the Westley site was completed in the summer of 2001. Based on this site characterization, CIWMB began the remediation of the Westley tire fire site. The remediation was completed in the fall of 2002. Site characterization and remediation of the Royster site was delayed until CIWMB extinguished the fire in December 2000. Site characterization efforts began in the fall of 2001, and an initial site assessment report was completed in October 2002. Once the site has been characterized, CIWMB will then implement measures to remediate the Tracy tire fire site over the next three years.